



Professional Course on

Seismic Design of Building and Bridge Structures

Organised by

Department of Civil Engineering, The University of Hong Kong

Supported by

American Society of Civil Engineers (Hong Kong Section)

Syllabus:

This three-day short course aims to introduce fundamental concepts and up-to-date knowledge that are required for the design and assessment of structures in countering seismic hazards in a low to moderate seismicity environment like Hong Kong. Fundamental principles and relevant skillsets are explained and illustrated with examples showing details of each step of the calculations. This year substantial amount of new materials have been incorporated to illustrate how results generated from the structural analysis of a building structure by a commercial software can be checked using hand calculations to verify correctness in the input/output to the computer program as quality control. A new static analysis method that provides results matching with dynamic analysis results will also be introduced. The modelling of reinforced concrete is covered at both the member and structural levels to facilitate structural design applications. There are also coverage on the selection and simulation of earthquake accelerograms and site-specific response spectra. These advanced topics can be of great practical value and yet are seldom taught in the classroom. Substantial new materials have been introduced and improvements made in response to feedbacks from participants of short courses delivered previously.

WHO SHOULD ATTEND: This course is suitable for civil and structural engineers working at different levels from graduate engineers to supervising senior / chief engineers, checkers, regulators and code drafters who want to acquire a sound fundamental understanding of the key principles on this subject in order to effectively exercise their respective professional duties that are associated with the engineering of structures in countering seismic hazards.

Speakers:

Professor Nelson Lam *BSc(Eng), MSc, DIC, PhD, FIEAust, NER, MICE, MStructE*, Professor, Department of Infrastructure Engineering (academic co-ordinator of graduate programs in civil and structural engineering and research higher degree co-ordinator), The University of Melbourne, Australia.

Professor Francis T.K. Au *BSc(Eng), MSc(Eng), PhD, FHKIE, FStructE, MICE, RPE(CVL, STL), CEng*, Professor and Head, Department of Civil Engineering, The University of Hong Kong.

Continuing Professional Development Credits:

The course is considered suitable for 3 CPD-day credits.

* A 'Certificate of Attendance' will be issued to those who attend all sessions.

Dates: Monday 21, Wednesday 23 & Friday 25 January 2019 (8:45 a.m. - 6:00 p.m.)

Course Venue: Room P503, Level P5, Graduate House, No. 3 University Drive, The University of Hong Kong, Hong Kong

Course Fee: HK\$4,500 (including course notes, a 3 CPD-day 'Certificate of Attendance'* and coffee breaks) (Non-refundable)

Enquiries:

All enquiries about this professional course should be addressed to Miss Aggie Sung, Department of Civil Engineering, The University of Hong Kong at 2859 1963 (Email: olsung@hku.hk).

Note: Participants are expected to bring along notebook computers or similar with spreadsheet facilities for Day 3.

THE UNIVERSITY OF HONG KONG
DEPARTMENT OF CIVIL ENGINEERING

Professional Course on

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The University of Hong Kong, Hong Kong

COURSE PROGRAMME

DAY ONE (Monday 21 January 2019) – Earthquake Engineering Fundamentals and Essential Skills

| | |
|---------------------|---|
| 8:45 am - 9:00 am | Registration |
| 9:00 am - 9:10 am | Course Introduction |
| 9:15 am - 10:30 am | Earthquake process and seismic hazard analysis |
| 10:30 am - 10:45 am | <i>Coffee Break</i> |
| 10:45 am - 12:15 pm | Seismic design considerations |
| 12:15 pm - 1:45 pm | <i>Lunch Break</i> |
| 1:45 pm - 2:45 pm | Seismic design of bridges in Hong Kong (I) # |
| 2:45 pm - 3:45 pm | Basic structural dynamics principles relevant to earthquake engineering |
| 3:45 pm - 4:00 pm | <i>Coffee Break</i> |
| 4:00 pm - 6:00 pm | Characterisation of earthquake loading |

DAY TWO (Wednesday 23 January 2019) – Methods of Analysis of Buildings and Bridges

| | |
|---------------------|--|
| 8:45 am - 9:00 am | Registration |
| 9:00 am - 10:30 am | Review of analysis methods for seismic actions Code static method of analysis |
| 10:30 am - 10:45 am | <i>Coffee Break</i> |
| 10:45 am - 12:15 pm | Introduction to non-linear static method of analysis Generalised Force Method of Analysis |
| 12:15 pm - 1:45 pm | <i>Lunch Break</i> |
| 1:45 pm - 2:45 pm | Seismic design of bridges in Hong Kong (II) # |
| 2:45 pm - 3:45 pm | More on Generalised Force Method of Analysis |
| 3:45 pm - 4:00 pm | <i>Coffee Break</i> |
| 4:00 pm - 6:00 pm | Seismic design and detailing of reinforced concrete structures |

DAY THREE (Friday 25 January 2019) – Advanced Topics

| | |
|---------------------|--|
| 8:45 am - 9:00 am | Registration |
| 9:00 am - 10:30 am | Dynamic analysis of buildings – theory and techniques |
| 10:30 am - 10:45 am | <i>Coffee Break</i> |
| 10:45 am - 12:15 pm | Dynamic analysis of buildings – practical applications to seismic design |
| 12:15 pm - 1:45 pm | <i>Lunch Break</i> |
| 1:45 pm - 2:45 pm | Seismic design of bridges in Hong Kong (III) # |
| 2:45 pm - 3:45 pm | Advanced dynamic analyses involving use of accelerograms |
| 3:45 pm - 4:00 pm | <i>Coffee Break</i> |
| 4:00 pm - 5:15 pm | Site Effects |
| 5:15 pm - 5:45 pm | Summary of key concepts conveyed in the entire short course |
| 5:45 pm - 6:00 pm | Q & A, discussions and feedbacks |
| 6:00 pm | Closing and Collection of Certificate of Attendance |

Given by Professor Francis T.K. Au; others are taught by Professor Nelson Lam.

REGISTRATION FORM

To: Miss Aggie Sung, Course Secretariat

Please register me / us for the following professional course:

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The University of Hong Kong, Hong Kong

Course Fee: HK\$4,500 per person (three-day)

Please complete in **ENGLISH** (in **BLOCK LETTERS**)

| | Surname | Given Name | Name of Company | Telephone | Email Address |
|---|----------------|-------------------|------------------------|------------------|----------------------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |

| Registration Fee | Number of Persons | Total |
|-------------------------|--------------------------|--------------|
| HK\$4,500 per person | | HK\$ |

The registration fee includes course notes, a 3 CPD-day 'Certificate of Attendance' and coffee breaks. The 'Certificate of Attendance' will be issued to those who have attended all sessions.

All payments are non-refundable.

Please send the completed registration form with a crossed cheque made payable to
“**The University of Hong Kong**”:

*Miss Aggie Sung, Course Secretariat
Department of Civil Engineering, The University of Hong Kong, Pokfulam Road, Hong Kong*

Please note that registration will only be confirmed upon receipt of payment and on a first-come-first-served basis.

Please do not send any cash in the post.

The official receipt for the registration fee will be distributed on the days of the course.

Enclosed Cheque No.: _____ Bank: _____